

TRI MO TRIMOTERM

Name of product: Gripper of FTV -HL INVISIO panels for horizontal façades

Types: PHL (50, 60, 80, 100, 120, 133, 150)



INSTRUCTIONS FOR USE

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INTRODUCTION - GENERAL INFORMATION

Purpose of instructions

The producer of a gripper of FTV- HL INVISIO panels for horizontal façades has prepared these instructions. A copy of the instructions is always supplied to the buyer together with the device.

The information given is intended for persons that are qualified for the performance of assembly of FTV- HL panels.

The purpose of use, i.e. safe and correct use of the gripper of FTV- HL panels for horizontal façades has been clearly defined in the instructions (hereinafter referred to as the gripper).

In order to facilitate the use the instructions have been divided into separate sections; the use of table of contents is recommended for faster search of separate sections that is printed on page No. 2 of these instructions.

Individual notes or warnings are written in bold print and marked by symbols!



danger

The instructions should be strictly followed. Disregard of these instructions might result in injuries or even death.



note

Warning about a dangerous situation that might arise during useful life of the product and might represent a potential danger for personnel, property or economic loss...



information

Important information



advice

It represents useful advice related to use of the device - gripper.

Producer of the gripper:

TRIMO d.o.o., Prijateljeva cesta 12, 8210 Trebnje, Slovenia.

Identification of the gripper

The basic data about your device are marked on the identification plate fixed on the casing of the device. The following data are stated on it:

- Producer,
- Type of the device,
- Load bearing capacity (max. loading allowed),
- Serial number,
- Year of production.

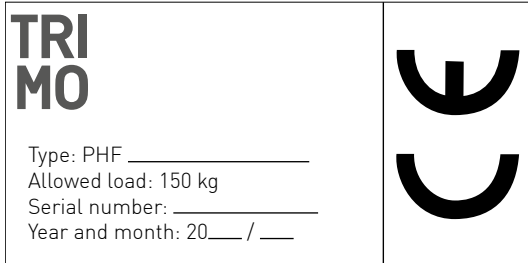


Fig. No. 1: Identification plate

Interpretation of data stated in the identification plate of the gripper:

- Type PHL_____ : PHL - Gripper of horizontal façade; width of the gripper or panel thickness for which the gripper can be used are stated on the line and orientation which can be **left or right**. Possible width - thickness types are 50,60, 80, 100, 120, 133 and 150 millimetres.
- The allowed loading has been calculated for panels of max. weight that can still be lifted by the gripper (The fact that panels longer than 2 m should be lifted by two grippers should be taken into account; a panel with max. weight of 200 kg can be lifted and transported by a pair of grippers). Serial number _____: the running number of the gripper is stated on the line, e.g.: 001, 002, 003, etc.
- Year and month of production 20___ / ____: The year of production is written on the first line and the month of production is written on the second line; example: gripper produced in August in the year 2002 is marked as: 2002/08.

Marks of grippers

Grippers are manufactured for the assembly of an exactly defined type of FTV -HL panels that differ among each other in thickness. The table shows what kind of gripper is required by the topical variety of FTV-HL panel. Grippers are always used in pair left in right. Data about the weight of an individual device are stated.

Table No. 1: Marks of gripper regarding panel thickness

	FTV panel (mm)	Mark (type) of the gripper	Gripper weight
1	60	PHF - 60	2.0 kg
2	80	PHF - 80	2.3 kg
3	100	PHF - 100	2.5 kg
4	120	PHF - 120	2.7 kg
5	133	PHF - 133	2.8 kg
6	150	PHF - 150	3.0 kg
7	200	PHF - 200	14.0 kg

DESCRIPTION OF DEVICE - GRIPPER

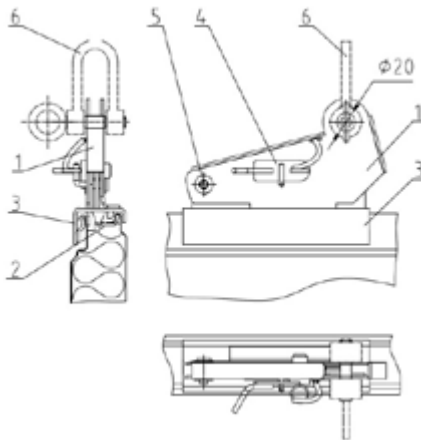
The gripper is exclusively used as an auxiliary tool for horizontal assembly of Trimoterm FTV panels. The use of the gripper for all other purposes is strictly prohibited.

The gripper consists of six components that represent a non-dismountable unit. All load-bearing elements are made of material St. 52-3.

Grippers for lifting of panels longer than 2 m are always used in a pair (left right), as shown in Fig. No. 4. By means of its form and force between the latch and the cover that “squeeze” the panel edge the gripper assures safe transport. The gripper cannot be universally used for all types of panel thickness. Each nominal thickness of a panel requires the use of a certain type of a gripper. They differ among each other only in width. Panels with nominal thickness of 50, 60, 80, 100, 120, 133 and 150 mm are used for horizontal façades. From the aspect of force and safety the panel FTV 150 is most suitable for transport of elements since all calculations and tests have been made with the gripper for this type of panel.

Components of the device

Fig. No. 2a: Components of the device



- Item 1 - Holder of the gripper
- Item 2 - Latch (left + right)
- Item 3 - Cover

- Item 4 - Pin with a protecting device
- Item 5 - Pin with a protecting device
- Item 6 - Lifting element (not a component of the device)

SAFETY CONCEPT

Safety symbols and warnings

Various symbols, whose meaning is explained in the introduction to these introductions for use, are used for the presentation of dangerous situations and consulting in the gripper use. Following of these instructions and advice is of vital importance for safe work with the device.

Safety mechanisms

“Human factor”

The gripper is a mechanical device without any rotating parts. The form of the latch prevents the use not foreseen. A gripper produced exactly for this purpose should be used for the assembly (see panel type and type of gripper in table No. 1). Lifting should not begin until the device is correctly placed on the panel.

System of panel gripping

Panel gripping is assured by the form (by the form of the latch that is placed in the form of the panel sheet metal) and friction between the panel and gripper. The levering system has been planned so that increase in the panel weight lifted increases also the latching force.

TRANSPORT AND STORING

Grippers are transported individually and manually, one in each hand. Special attention should be paid during the transport since the device should not be dropped or should not damage feet and/or other parts of the body. When carrying and transporting three or more grippers these are transported in a case or any other packaging. Devices should not get mechanically damaged during the transport. When storing them, grippers are protected against meteorological influences and mechanical damage.

USE



Before use the device should be visually checked. If any mechanical defects are visible, the device should be eliminated from the working process. Any repair or replacement of damaged parts of the device is strictly prohibited.

Obligations of the gripper user

- The gripper can be used only for the purpose, for which the gripper has been produced,
- The use of the gripper is allowed only in compliance with the instructions of the producer,
- User of the gripper should keep records about the use of gripper (Records are in the appendix to these instructions).
- It is not allowed for persons to dwell under the panel when it is being transferred by the grippers PHL.

Loading of the gripper

One gripper PHL can be loaded by max. weight of 100 kg. A pair of grippers is always used for transport of panels longer than 2 m.

Allowed length of panels (regarding panel type) that can be transported by a pair of grippers is evident from Table No. 2: Allowed dimensions - lengths are printed on green background.

The top allowed weight of a panel that can be transported by an individual type of gripper is calculated with respect to the type and length of a panel and under consideration of the panel weight per m².

It is visible from Table No. 2 that the gripper - type PHL 150 can be used for transport of panels in a length up to 8 m and the gripper - type PHL 100 and 120 in a length up to 10 m (red areas mark panel weight exceeding the allowed loading of a gripper pair).

Table No. 2: Weight of panels regarding length and type

Mark	PHL 50 left/right	PHL 60 left/right	PHL 80 left/right	PHL 100 left/right	PHL 120 left/right	PHL 133 left/right	PHL 150 left/right
Length	FTV-HL 50	FTV-HL 60	FTV-HL 80	FTV-HL 100	FTV-HL 120	FTV-HL 133	FTV-HL 150
2 m	33	35	39.8	44.8	49.6	49.6	56.8
4 m	67	70	79.6	89.6	99.2	99.2	113.6
6 m	100	105	119.4	134.4	148.8	148.8	170.4
8 m	132	140	159.2	179.2	198.4	198.4	227.2
10 m	166	175	199	224	248	248	
12 m	200	210	238.8				

Note: Panel weight is stated in kg.

Table No. 3 presents data which might be used in control calculation of the panel weight depending on its length.

Table No. 3: Weight of individual panel type per m²

	FTV-HL 50	FTV-HL 60	FTV-HL 80	FTV-HL 100	FTV-HL 120	FTV-HL 133	FTV-HL 150
Weight (kg/m ²)	16.6	17.5	19.9	22.4	24.8	26.4	28.4



Panels in length types that are marked in the red area of Table No. 2, should not be transported by the grippers discussed. These panels are: FTV 100 and FTV 120, longer than 10 m, and FTV 150 longer than 8 m.

Mounting of grippers

First Trimo sealing tape should be cut on a spot touching the gripper in the panel edge and then the latches of grippers (Fig. No. 3) should be placed between the sheet metal faces of the panel. Latches are pressed together, the holder is placed and a pin with a protecting device is inserted in the opening (the pin is inserted in the opening on the side where the load-bearing element for the protecting chain of the pin is fixed). The latches should be turned as it is shown in Fig. No. 4; the distance between the grippers should be such that the angle is smaller than 120° , but not smaller than 90° (Fig. No. 4).

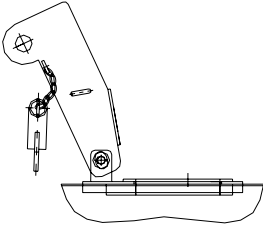


Fig. No. 3: Mounting of a cover

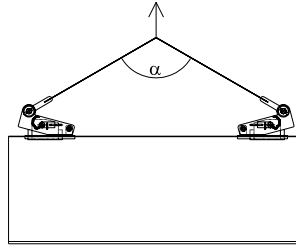


Fig. No. 4: Mounting of a gripper pair PHL left and right

The use of one gripper is exceptionally allowed in cases when panels are not longer than 2 m, but the gripper should be placed so that the centroidal axis runs over the lifting element as it is shown in Fig. No. 5.

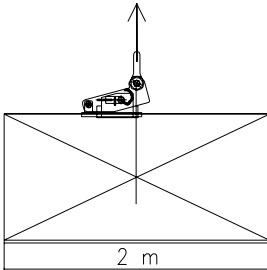


Fig. No. 5: Use in case of panels up to 2 m long

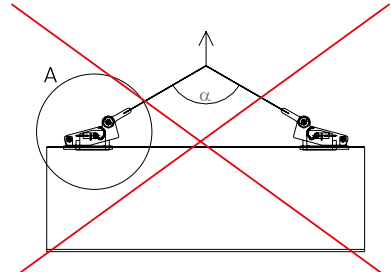


Fig. No. 6: Incorrect mounting of a gripper

Fig. No. 6 presents incorrect fixing of grippers on a panel. The direction of drawing a steel rope should be in direction shown in Fig. No. 7.

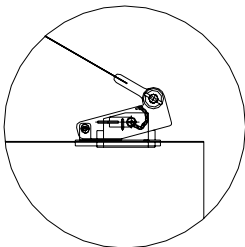


Fig. No. 7: Correct direction of gripper mounting

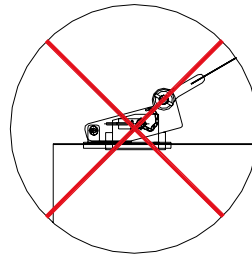


Fig. No. 8: Incorrect mounting (detail A)





Standard elements (steel rope, lifting elements, etc.) are used as elements connecting the lifting device (lift) and gripper that is the subject matter of these instructions. Their characteristics (dimensions, latching systems) should be in compliance with the standards. These elements are not the subject matter of description in these instructions and are not components of the gripper.



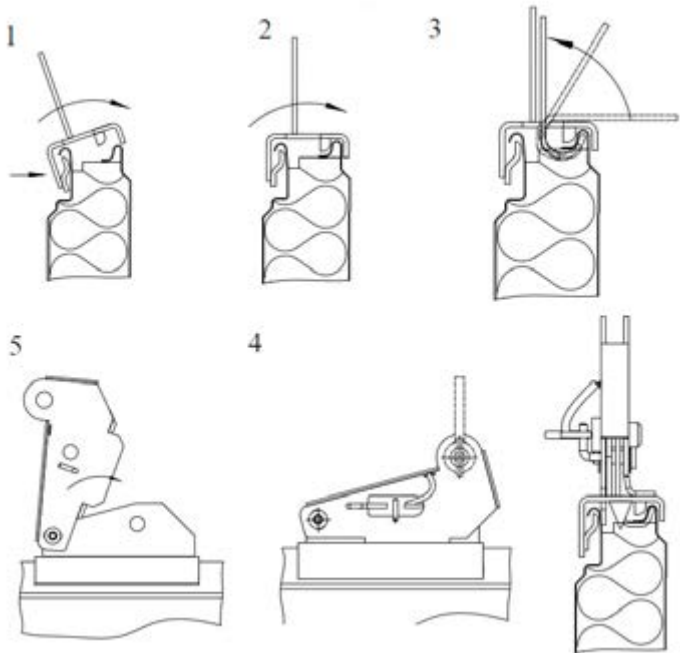
Lifting element (Item No. 6) is recommended as a connecting element between the gripper and steel rope as it is presented among components of the device on page No. 6.

Positioning of latches

Fig. No. 9 presents arrangement of latches in the panel edge. The gripper is placed on a panel with a pin drawn out and a holder lifted so that the cover of the gripper can be placed on the panel edge. Latches are inserted in the bearing as it is presented in a small drawing of Fig. No. 9 (it is important that both latches are fixed). The holder of the gripper is placed over a pair of latches (see Fig. No. 9).



Fig. No. 9: Positioning of latches and gripper holder PHL



A safety pin (Item No. 5) is inserted in the opening between a holder and gripper and turned in the position preventing falling out from the bearing. The pin is inserted from the side where the load-bearing element of the protecting chain of the pin is placed. Any other position of the safety pin is not correct.

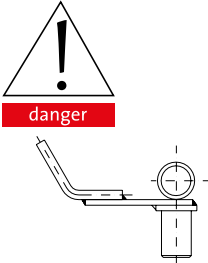


Fig. No. 10: Safety pin

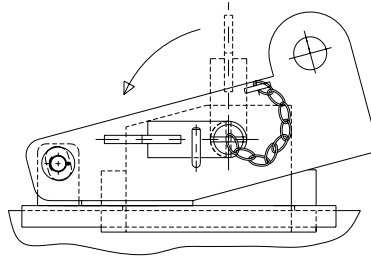


Fig. No. 11: Insertion of a safety pin

Panel lifting

Lifting of a panel should be carried out evenly and without any impact shocks. Thereby attention should be paid that panels at the bottom do not get damaged. Behaviour of the grippers should be monitored during the lifting process and in case of any unforeseen events lifting should be immediately interrupted and mounting of grippers checked again.

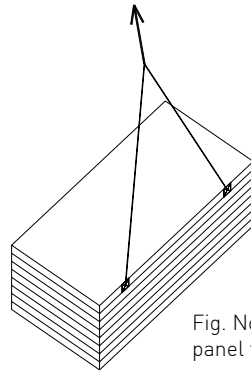


Fig. No. 12: Lifting of a panel from a pallet



After the grippers have been mounted and before the beginning of lifting all persons should move away and back, safety distance should be kept - danger of panel swinging, function defect.



Standing under the load is strictly prohibited.



All incorrect matters and dangers shall become evident already at the initial stage of lifting when a part of panel is still on the ground.

Unfastening of grippers

Unfastening of grippers is performed in the opposite sequence as fastening. The gripper is fixed on the load-bearing rope during the complete procedure.

MAINTENANCE

The gripper should be protected against external (weather and mechanical) influences. The gripper that gets very abraded during the use should be protected against the corrosion. Before each use the gripper should be visually checked. If any deformations of the load-bearing elements (safety pin, latches, cover, holder) are observed they should be measured. If they exceed 1 mm, the gripper should be eliminated from use.

Useful life

When the gripper has lifted 10,000 m² FTV panels or after one year of use of the device should be eliminated from use (Records of gripper use). If it is established during daily checking that individual parts are worn and torn and exceed 1 mm over the normal status, the gripper should be eliminated from further use.

Control page

Kind of checking	Kind of activity	Place of checking	Method of performance	Performer	Note
Daily	Control checking of wear and tear	Complete device	Visual	Operator - Connecting person	See Maintenance
Half-yearly	Cleaning, Anti-corrosion protection	Complete device	Visual, anti-corrosion protection if required	Operator - Connecting person	See Maintenance

RECORD OF GRIPPER USE (OBLIGATORY USE)

Type of gripper: _____

Serial number: _____

Month and year of production: _____

No.	Date of use		Location	Project	Country	Quantity of built in FTV panels(m ²)	Accepted by (Name and Surname)	Notes
	From	To						
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								

Note: The gripper can be used for lifting up to 10,000 m² FTV HL panels or for a period of one year.

TRIMO D.O.O.

PRIJATELJEVA CESTA 12,
8210 TREBNJE, SLOVENIA

T: +386 (0)7 34 60 200

F: +386 (0)7 34 44 125

TRIMO@TRIMO-GROUP.COM

WWW.TRIMO-GROUP.COM

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